

ABSTRACT OF THE DISCLOSURE

An all-optical switching site for extending a range and agility of an all-optical WDM/DWDM network, by controlling signal intensity balance at each link and performing adaptive dispersion compensation for each dropped channel. The all-optical switching site includes a variable optical attenuator (VOA) for each output channel and an adaptive dispersion compensation module (ADCM) in each drop path. The VOAs of output channels transported by an output optical fiber link are controlled with downstream feedback to adjust channel signal intensity balance. The ADCM comprises an adaptive controller and a dispersion compensation element adapted to apply a different amount of dispersion compensation to a channel it receives. The adaptive controller receives feedback from a receiver or a signal analyzer, in order to optimize the dispersion compensation. The all-optical switching site reduces network operational cost, improves network reach and significantly enhances network agility.